

BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Subsidiary Diploma in Engineering Pearson BTEC International Level 3 Foundation Diploma in Engineering Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Electrical and Electronic Engineering Pearson BTEC International Level 3 Diploma in Mechanical Engineering Pearson BTEC International Level 3 Diploma in Digital Engineering Pearson BTEC International Level 3 Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Diploma in Aeronautical Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Electrical and Electronic Engineering Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering Pearson BTEC International Level 3 Extended Diploma in Digital Engineering Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Extended Diploma in Aeronautical Engineering
Unit number and title	Unit 41: Manufacturing Secondary Machining Processes
Learning aim(s)	B: Set up traditional secondary processing machines to manufacture a component safely C: Carry out traditional secondary machining processes to manufacture a component safely
Assignment title	Setting up and carrying out secondary machining processes
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are working as a final year apprentice in the machine shop of a medium sized engineering company. Your supervisor is pleased with your work and your ability to operate machinery to carry out secondary machining processes. Based on a review of your existing practical skills and the research activities that you have completed, your supervisor would like you to show further evidence of your development, by investigating the health and safety requirements of secondary machining processes before setting up and machining a component.
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Task 1	You have been asked to consider issues related to health and safety and to produce a component using traditional processing machines. To do this: Your tutor will provide you with a drawing for a component that has at least six different features that you will need to safely and accurately produce using at least two traditional machining processes. You must: 1. Explain how health and safety is managed for the machines you intend to use and what regulations should be met; and 2. Produce a risk assessment, which should include consideration of all the significant hazards, be laid out on in an appropriate template and include suitable control measures. Ensure you show your use of this in the following activities. You then need to: 1. Safely and correctly set up the two machines to produce the component, using suitable and appropriate workpiece holding devices, tools and machine parameters (speeds and feeds); 2. Use the machines to produce the component safely and accurately (so free from burrs, sharp corners and false cuts); 3. Take measurements for each of the features and make adjustments to ensure dimensional and surface texture accuracy during the machining activities; and 4. Use cutting fluid where relevant, remove swarf and then remove the workpiece from the machine correctly. You must also: 5. Constantly refine the machine set-up and parameters during the machining activities to ensure the processes continue to produce a component that is accurate. Factors to consider include: • effectiveness - for example by optimising the feed rate, the position/order of tools and the distance travelled by the tools to machine the component in a realistic time and • efficiency - for example by replacing worn tools, using the correct cutting fluid and monitoring the machining processes. You must provide evidence of all of the above using the most appropriate evidence forms as noted below.
Checklist of evidence required	Evidence will be in a portfolio and will include a developmental log book, risk assessment, observation records/witness statements, the finished component, annotated photographs and drawings, set-up planning notes and complete quality control documents.



Criteria covered by this task:

Unit/Criteria reference	To achieve the criteria you must show that you are able to:
41/BC.D2	Refine, during the process, the safe set up and parameters of the traditional secondary processing machines to effectively and efficiently manufacture a component
41/B.M2	Use the correct tooling, work-holding devices and speeds and feeds to set up safely at least two traditional secondary processing machines
41/C.M3	Manufacture accurately the component containing at least six features
41/B.P2	Explain what health and safety requirements apply when machining a component and conduct a risk assessment of the work environment
41/B.P3	Set up safely at least two traditional secondary processing machines
41/C.P4	Manufacture the component safely using at least two different traditional secondary machining processes and containing at least six features

Sources of information to support you with this Assignment

Books

Meyers A and Slattery J – *Basic Machining Reference Handbook* (International Press Inc., 2001) ISBN 9780831131203
 Walker J R – *Machining Fundamentals: From Basic to Advanced Techniques* (Goodheart-Willcox Co Inc., 2004) ISBN 9781590702499
 Black B J – *Workshop Processes, Practices and Materials* 5th Edition (Routledge, 2015) ISBN 1138784727

Websites

www.hse.gov.uk/work-equipment-machinery/standard.htm
www.hse.gov.uk/risk/assessment.htm

Above are some examples of websites. Further useful resources may be found at qualifications.pearson.com/en/support/published-resources.html#step1

Other assessment materials attached to this Assignment Brief

Component drawing, risk assessment template